

THE INFLICTED TALIPES OF THE CHINESE

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Actual specimens of the feet of Chinese women are sufficiently rare in this country to warrant the following remarks, which are relative to a foot kindly presented to the Museum of the Liverpool Tropical School of Medicine by Dr. J. Bell, Hong Kong. Since there are in the Museum of the College of Surgeons of England, and elsewhere, fully dissected specimens, it was considered advisable to keep this one in its entirety. It consists of a left foot and the lower end of the leg, the section having been made straight across the limb, $1\frac{3}{4}$ inches above the inner malleolus. The age of the subject is unknown, but it is certainly the foot of an adult woman. The following are some of the more important measurements:—

Total length, $5\frac{7}{8}$ inches.

Breadth at metatarso-phalangeal joint, 3 inches.

Height from the ground to upper surface of scaphoid, 3 inches.

Maximum height from the ground to lower surface of soft tissues, $\frac{3}{4}$ inch.

Distance between the supporting points, 3 inches.

The most striking point at first sight is that the fifth toe is little more than half the distance from the heel to the tip of the great toe. This description conveys, more than actual measurements, the degree of antero-posterior shortening present. But it may be mentioned, for the sake of comparison, that normally the fifth toe is situated at a distance from the heel of eight-elevenths of the total measurement.

The position is, roughly, in surgical terms one of Pes Cavus, accompanied by a varoid deformity of the outer three toes, and a valgoid position of the inner two. The transverse creases often seen in talipes acquired from any cause are plainly visible. They run horizontally behind the Tendo Achillis, above the heel. The deep furrow across the sole divides the foot as a supporting structure into

two portions—an anterior, triangular, with the base backwards and measuring 3 inches from front to back, and a posterior, circular, measuring 2 inches in diameter.

X-ray photographs were kindly taken by Mr. C. Thurston Holland, radiographer to the Royal Infirmary, and these throw much light on the nature of the deformity and the probable mechanism of its production. In the skiagram taken from above, the great toe is seen to be in a valgoid position, the greater amount of dislocation being at the metatarso-phalangeal joint. This outward position is not more than that of the great toes of many European civilized women. The second and third toes show the same change at the metatarso-phalangeal articulations, whilst the interphalangeal joints are acutely flexed. In the fourth and fifth toes this flexion of the interphalangeal joints completely masks the fact that the first phalanges are pushed outwards from their metatarsal bones.

The first impression, on looking at the side view, is that the posterior part of the os calcis is in line with the tibia instead of being at right angles to it. Indeed, a radiograph of the os calcis alone, when compared with that of a normal bone, explains approximately half of the extremely arched condition of the foot. The posterior half of the os calcis is set almost at right angles to the anterior half. How this alteration in the shape of the calcaneum has been brought about is open to question. There are two possible explanations, either of which may be sufficient. A consideration of the ossification of the bone and of the accompanying radiograph supports the view which I take, that the change is mainly in the soft, newly-formed portion of the os calcis which is in contact with the so-called epiphyseal line (a better term for which would be epiphyseal plane), or perhaps in the epiphyseal plane itself. The cartilaginous calcaneum at birth contains a small central nucleus of bone which ultimately forms the main portion. At about the tenth year a speck of bone appears at the posterior end, and these bony formations meet at the sixteenth year. According to my view, the pressure, which is as a matter of fact applied in an antero-posterior direction, has caused the epiphyseal end to slide, as it were, round the main body of the bone until it occupies a position below instead of behind it. Against this view it may be argued that the epiphysis forms a relatively small proportion of the bone, as evidenced by the thin flake of bone which

can just be separated from the rest of the calcaneum at about the sixteenth year, the growth of bone having been actively taking place for only six years. But every epiphyseal plane is a travelling plane, progressing in a direction away from the centre to the end of the bone, and originally this plane must have occupied a position much further forward, possibly as far as the point x .

Another view which occurs to me, but which I regard as less likely, is that by the force of the bandages added to that of the Tendo Achillis the epiphysis, though forming new bone, cannot form it in an antero-posterior direction, and thus perform its true function of adding to the length of the bone. It is therefore compelled to deposit ossific material in the direction of least resistance, namely, downwards, and this downward prolongation is therefore somewhat of the nature of an exostosis. The upward pressure of the ground, corresponding to the weight of the child, must on this assumption offer less resistance than the handages.

In the X-ray photographs it will be noted that, according to the former view, the original posterior or epiphyseal end of the calcaneum is from y to z , and the patient walks on the insertion of the Tendo Achillis, a statement made in 1880, and based on a dissected specimen.

According to the latter explanation, the original posterior end of the os calcis is from x to z , and the Tendo Achillis is still inserted about half an inch below the point x .

The os calcis, then, is in any case responsible for the posterior half of the arch. In contrast to this, the anterior half is produced by a small change in several bones, rather than by a great change in one. From the summit of the arch (the astragalus) forwards, there is a slight degree of shifting of the articular surfaces of each bone. This is a purely anatomical change, and it is doubtful if any particular notice would be taken of these individual bones by any anatomist.

The photographs are of value clinically in that they illustrate, to the naked eye at all events, the emphatic statement made long ago by Hilton that the fixation of a healthy joint, even for years, produces no pathological change. They are, further, of interest to the orthopaedic surgeon, in that they shew how much can be done by manipulation and continued pressure.

In the production of the deformity, which takes place during the fifth to the seventh years, the size of the foot is reduced by bandages which turn the outer toes inwards and under the sole to make the foot narrow, while the bandages applied from front to back make it short.

The specimen is regarded by those familiar with the East in years gone by as a not excessive instance of the practice. The evidence of ulceration seen on the skin is in its slightness quite the exception to the rule, gangrene being of fairly common occurrence with the frequent loss of one or more of the outer toes.

DESCRIPTION OF PLATES

- I—X-ray of normal foot from the side.
II—X-ray of Chinese foot from the side.
A = axis of anterior half of os calcis.
P = axis of posterior half of os calcis
III—X-ray of Chinese foot from above.
IV, V—Foot from side and from below.







